CHAPTER 1
TERMINOLOGY AND DEFINITIONS

The following are specialized terms commonly used when discussing hoisting and rigging operations. Many may not be used in this standard but are included for general information. The terms are arranged in alphabetical order. Illustrations are included for clarity.

ABRASION: Surface wear.

ACCELERATION STRESS: Additional stress imposed due to increasing load velocity.

ALTERNATE LAY: Lay of wire rope in which the strands are alternately regular and lang lay.

ANSI: American National Standards Institute.

APPOINTED: Assigned specific responsibilities by the employer or the employer's representative.

AREA, METALLIC: Sum of the cross-sectional areas of individual wires in a wire rope or strand.

ATTACHMENT: A device other than conventional forks or load backrest extension, mounted permanently or removably on the elevating mechanism of a truck for handling the load. Popular types are fork extension clamps, rotating devices, side shifters, load stabilizers, rams, and booms.

AUTHORIZED: Assigned by a duly constituted administrative or regulatory authority.

AUXILIARY HOIST: Supplemental hoisting unit of lighter capacity and usually higher speed than the main hoist.

BACK STAY: Guy used to support a boom or mast or that section of a main cable, as on a suspension bridge, or cableway, and the like, leading from the tower to the anchorage.

BAIL: A U-shaped member of a bucket, socket, or other fitting.

BASKET OR SOCKET: The conical portion of a socket into which a splayed rope end is inserted and secured with zinc.

BATTERY-ELECTRIC TRUCK: An electric truck in which the power source is a storage battery.

BECKET LOOP: A loop of small rope or a strand of rope fastened to the end of a large wire rope to facilitate installation.

BENDING STRESS: Stress on wires of a wire rope imposed by bending. This stress need not be added to direct load stresses. When sheaves and drums are of suitable size, bending stress does not affect the normal life of the wire rope.

BIRDCAGE: A colloquialism describing the appearance of a wire rope that is forced into compression. The outer strands form a “cage” and at times displace the core.

BIRDCAGING: The twisting of fiber or wire rope in an isolated area in the opposite direction of the rope lay, causing it to take on the appearance of a birdcage.

BOOM (CRANE): A member hinged to the rotating superstructure and used for supporting the hoisting tackle.

BOOM LINE: A wire rope for supporting or operating the boom on derricks, cranes, draglines, shovels, and the like.

BRAKE: A device used for slowing or stopping motion by friction or electromagnetic means.

BRAKE, DRAG: A brake that provides stopping force without external control.

BRAKE, HOLDING: A brake that sets automatically and that prevents motion when power is off.

BRAKE, PARKING: A device to prevent the movement of a stationary vehicle.

BRAKING, COUNTER TORQUE: A method of stopping motion in which the power to the motor is reversed to develop torque in the opposite direction.

BRAKING, DYNAMIC: A method of controlling crane motor speeds when in the

overhauling condition to provide a retarding force.

BRAKING, MECHANICAL: A method of slowing motion by friction.

BRAKING, REGENERATIVE: A form of dynamic braking in which the electrical energy generated is fed back into the power system.

BREAKING STRENGTH: The measured load required to break a wire rope or chain.

BRIDGE: The part of a crane, consisting of girders, walkways, railings, trucks, and drive mechanisms, that carries the trolley or trolleys.

BRIDGE TRAVEL: Horizontal travel of the crane parallel with runway rails.

BRIDLE SLING: A sling composed of multiple legs (branches), the top ends of which terminate in a fitting that latches onto the lifting hook.

BULL RING: The main large ring of a sling to which sling legs are attached.

BUMPER (BUFFER): An energy-absorbing device for reducing impact when a moving overhead crane or trolley reaches the end of its permitted travel, or when two moving cranes or trolleys come into contact.

CAB: The operator's compartment.

CABLE: A term loosely applied to wire ropes, wire strands, manila ropes, and electrical conductors.

CABLE-LAID WIRE ROPE: A type of wire rope consisting of several independent wire ropes laid into a single wire rope.

CABLE CROWD ROPE: A wire rope used to force the bucket of a power shovel into the material being handled.

CANTILEVER TRUCK: A self-loading counterbalanced or noncounterbalanced truck equipped with cantilever load-engaging means, such as forks (see Figure 10-3).

CARRIAGE: A support structure for forks or attachments, generally roller-mounted, traveling vertically within the mast of a cantilever truck.

CENTER: A single wire or fiber in the center of a strand around which the wires are laid.

CENTER CONTROL: The position near the center of a truck cab from which the operator controls movement of the truck.

CHOKER ROPE: A short wire-rope sling used to form a slip noose around the object to be moved or lifted (see Figure 1-1).

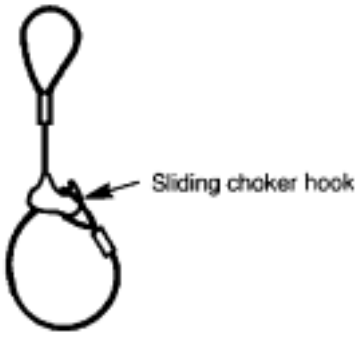

Figure 1-1. Choker rope.

CIRCUMFERENCE: Measured perimeter of a circle circumscribing the wires of a strand or the strands of a wire rope.

CLAMP, STRAND: A fitting used to form a loop at the end of a length of strand; consists of two grooved plates and bolts.

CLEARANCE: The distance by which one object clears another, or the clear space between them.

CLEVIS: A U-shaped fitting with pins.

CLIP: A fitting used to clamp two parts of wire rope.

CLOSED SOCKET: A wire-rope fitting consisting of an integral becket and bail.

CLOSING LINE: Wire rope that closes a clamshell or orange-peel bucket and then operates as a hoisting rope.

COIL: Circular bundle of wire rope not packed on a reel.

COLLECTOR: Contacting device mounted on a bridge or trolley and used to collect current from the conductor system.

COME-ALONG: A portable, hand-operated device consisting of a housing, a length of chain or wire rope, two hooks, and a ratcheting lever, that is used for miscellaneous pulling.

CONDUCTOR: Wire, angles, bars, tees, or special sections mounted to transmit current to the collectors.

CONICAL DRUM: Grooved hoisting drum of varying diameter.

CONSTRUCTION (WIRE ROPE): Refers to the design of wire rope, including number of strands, number of wires per strand, and arrangement of wires in each strand.

CONTINUOUS BEND: Reeving of wire rope over sheaves and drums so that it bends in one direction (as opposed to reverse bend).

CONTROLLER: An operator's device for regulating the power delivered to a motor or other equipment.

CONTROLLER, SPRING RETURN: A controller that, when released, will return automatically to a neutral position.

CORE: The center member of a wire rope around which the strands are laid. It may be fiber, a wire strand, or an independent wire rope.

CORING LINE: Wire rope used to operate the coring tool for taking core samples during the drilling of a well.

CORROSION: Chemical decomposition by exposure to moisture, acids, alkalies, or other destructive agents.

CORRUGATED: A term used to describe the grooves of a sheave or drum when worn so as to show the impression of a wire rope.

COUNTERBALANCED TRUCK: A truck equipped with load-engaging means wherein, during normal transporting, all the load is external to the polygon formed by the wheel contacts (see Figure 10-3).

COVER WIRES: The outer layer of wires.

CRANE: A machine used for lifting and lowering a load vertically and moving it horizontally and that has a hoisting mechanism as an integral part of it.

CRANES, TYPES OF:

Automatic Crane: A crane that, when activated, operates through a preset cycle or cycles.

Cab-Operated Crane: A crane controlled by an operator in a cab located on the bridge or trolley.

Cantilever Gantry Crane: A gantry or semigantry crane in which the bridge girders or trusses extend transversely beyond the crane runway on one or both sides.

Floor-Operated Crane: A crane whose operation is controlled by use of a pendant in the hands of an operator on the floor or on an independent platform.

Gantry Crane: A crane similar to an overhead crane, except that the bridge for carrying the trolley or trolleys is rigidly supported on two or more legs running on fixed rails or other runway.

Jib Crane: A fixed crane with a vertical rotating member supported at the bottom (also at the top in some types) from which an arm extends to carry the hoist trolley. Jib cranes are most commonly mounted on a vertical column, supplied as part of the jib crane, or on existing structural members (e.g., a wall-mounted jib crane).

Mobile Crane: For the purposes of this chapter, mobile cranes are defined as wheel-mounted cranes, truck cranes, and crawler cranes.

- A **wheel-mounted** crane consists of a rotating structure with power plant, operating machinery, and boom, mounted on a base or platform equipped with axles and rubber-tired wheels for travel. The base is usually propelled by an engine in the superstructure, but it may be equipped with a separate engine controlled from the superstructure (see Figures 15-1, 15-3, 15-5, 15-6, 15-7, 15-9, and 15-10).

- A **truck-mounted crane** consists of a rotating superstructure with power plant that operates machinery and boom, mounted on an automotive truck equipped with a power plant for travel. Commercial truck-mounted cranes are included in this category (see Figures 15-3, 15-7, 15-9, and 15-10).

- A **crawler crane** consists of a rotating superstructure with power plant, operating machinery and boom, mounted on a base equipped with crawler treads for travel (see Figures 15-2 and 15-8).

Overhead Traveling Crane: A crane with a movable bridge carrying a movable or fixed hoisting mechanism and traveling on an overhead fixed-runway structure.

Power-Operated Crane: A crane whose mechanism is driven by electricity, air, hydraulics, or internal combustion.

Pulpit-Operated Crane: A crane operated from a fixed operator station that is not attached to the crane.

Remote-Operated Crane: A crane controlled by an operator not in a pulpit or a cab attached to the crane, by any method other than pendant or rope control (e.g., radio-controlled crane).

Semigantry Crane: A gantry crane with one end of the bridge rigidly supported on one or more legs that run on a fixed rail or runway, the other end of the bridge being supported by a truck running on an elevated rail or runway.

Wall-Mounted Crane: A crane having a jib, with or without a trolley, supported from a side wall or line of columns of a building. It is a traveling-type crane and operates on a runway attached to the side wall or line of columns.

Wall-Mounted Jib Crane: See Cranes, Types Of, Jib Crane.

CRITICAL DIAMETER: Diameter of the smallest bend for a given wire rope that permits the wires and strands to adjust themselves by relative movement while remaining in their normal positions.

CRITICAL ITEM: A part, assembly, component, or piece of equipment designated as critical by a purchaser or facility operator, because the dropping, upset, or collision of it could: (a) cause damage that would result in schedule delay, (b) cause undetectable damage that could jeopardize future operation or the safety of the facility, (c) result in significant release of radioactivity or other undesirable condition, or (d) present a potentially unacceptable risk of personnel injury or property damage. Critical items may include pumps, heat exchangers, piping subassemblies, other primary-system components, fuel assemblies, large radiation-shielded shipping casks, or other items that require special care in handling because of size, weight, installation in close-tolerance receptors, fragility, extreme susceptibility to damage, or other unusual factors.

CRITICAL SERVICE: The use of equipment or tackle for hoisting, rigging, or handling of critical items.

CYLINDRICAL DRUM: Hoisting drum of uniform diameter.

DECELERATION STRESS: Additional stress imposed on a wire rope due to decreasing the load velocity.

DEFLECTION:

- Sag of a rope in a span, usually measured at midspan as the depth from a chord joining the tops of the two supports.

- Any deviation from a straight line.

DESIGN FACTOR: Ratio of ultimate strength to the design working stress.

DESIGNATED: Selected or assigned by the employer or the employer's representative as being qualified to perform specific duties.

DESIGNATED LEADER: "An individual assigned responsibility for hoisting and rigging activities requiring more than one person".

DIAMETER: Distance measured across the center of a circle circumscribing the wires of a strand or the strands of a wire rope.

DIESEL-ELECTRIC TRUCK: An electric truck in which the power source is a generator driven by a diesel engine.

DOCKBOARD: A portable or fixed device for spanning the gap or compensating for the difference in level between loading platforms and carriers.

DOG-LEG: Permanent short bend or kink in a wire rope caused by improper use.

DRAGLINE: Wire rope used to pull an excavating or drag bucket.

DRIVE: Motor, coupling, brake and gear case, or gear cases used to propel bridge, trolley, or hoist.

DRIVE GIRDER: A girder on which is mounted the bridge drive, cross shaft, walk, railing, and operator's cab.

DRUM: A cylindrical-flanged barrel of uniform (cylindrical drum) or tapering (conical drum) diameter on which a wire rope is wound for operation or storage. It may be smooth or grooved.

ELASTIC LIMIT: Limit of stress beyond which a permanent deformation takes place within the material. This limit is approximately 55–65 percent of breaking strength of steel-wire ropes.

ELECTRIC TRUCK: A truck in which the principal energy is transmitted from power source to motor(s) in the form of electricity.

END CONTROL: An operator-control position that is located at the end opposite the load end of the truck.

EQUALIZER: A device used to compensate for unequal length or stretch of a hoist rope.

EQUALIZING SLINGS: Slings composed of wire rope and equalizing fittings.

EQUALIZING THIMBLES: A special type of fitting used as a component part of some wire-rope slings.

EYE OR EYE SPLICE: A loop with or without a thimble formed in the end of a wire rope.

FAIL-SAFE: A provision designed to automatically stop or safely control any motion in which a malfunction could occur.

FATIGUE: A term commonly applied to progressive fracture of any load-supporting member.

FIBER CENTERS: Cords or rope made of vegetable fiber used in the center of a strand.

FIBER CORES: Cords or rope made of vegetable fiber used in the core of a wire rope.

FIRST POINT: The first setting on the operator's controller that starts crane motion (slowly) in each direction.

FITTING: Any accessory used as an attachment for wire rope.

FLAG: Mark or marker on a rope to designate position of load.

FLAT ROPE: Wire rope made of parallel alternating right-lay and left-lay ropes sewn together by relatively soft wires.

FLATTENED STRAND ROPE: A wire rope with either oval or triangular strands that present a flattened rope surface.

FLEET ANGLE: Angle between the position of a rope at the extreme end wrap on a drum and a line drawn perpendicular to the axis of the drum through the center of the nearest fixed sheave.

FORKS: Horizontal tine-like projections, normally suspended from the carriage, used to engage and support loads.

FORK HEIGHT: The vertical distance from the floor to the load-carrying surface adjacent to the heel of the forks with the mast vertical, and in the case of reach trucks, with the forks extended.

FORKLIFT TRUCK: A high-lift self-loading truck equipped with load carriage and forks for transporting and tiering loads (see Figure 10-3).

GALVANIZE: To coat with zinc to protect against corrosion.

GALVANIZED ROPE: Rope made of galvanized wire.

GALVANIZED STRAND: Strand made of galvanized wire.

GALVANIZED WIRE: Wire coated with zinc.

GAS-ELECTRIC TRUCK: An electric truck in which the power source is a generator driven by an LP-gas or gasoline engine.

GROMMET: A seven-strand wire-rope sling made from one continuous length of strand or an endless synthetic-web sling.

GROOVED DRUM: Drum with grooved outer surface to accommodate and guide a rope.

GROOVES: Depressions in the outer surface of a sheave or drum for positioning and supporting a rope.

GUY LINE: Strand or rope, usually galvanized, for holding a structure in position.

HANDLING FIXTURE: A cradle, structure, shipping fixture, or container designed specifically to facilitate supporting, lifting, or handling a component during fabrication, loading, shipping, storage, or installation.

HIGH-LIFT TRUCK: A self-loading truck equipped with an elevating mechanism designed to permit tiering. Popular types are high-lift platform trucks (see Figure 10-3).

HIGH-LIFT PLATFORM TRUCK: A self-loading truck equipped with an elevating mechanism intended primarily for transporting and tiering loaded skid platforms (see Figure 10-3).

HOIST: A device that applies a force for lifting or lowering.

HOIST, LEVER OPERATED: A lever-operated manual device used to lift, lower, or pull a load and to apply or release tension.

HOLDING LINE: Wire rope on a clamshell or orange-peel bucket that holds the bucket while the closing line is released to dump the load.

HOOK LOAD: The total live weight supported by the hook of a crane, derrick, or other hoisting equipment, including the load, slings, spreader bars, and other tackle not part of the load but supported by the hook and required for the handling of the load.

IDLER: Sheave or roller used to guide or support a rope.

INDEPENDENT WIRE-ROPE CORE: Wire rope used as the core of a larger rope.

INNER WIRES: All wires of a strand except surface or cover wires.

INTERNAL-COMBUSTION ENGINE TRUCK: A truck in which the power source is a gas or diesel engine.

INTERNALLY LUBRICATED: Wire rope or strand having all wires coated with lubricant.

KINK: Permanent distortion of wires and strands resulting from sharp bends.

LAGGING: External wood covering on a reel of rope or a strand.

LANG-LAY ROPE: Wire rope in which the wires in the strands and the strands in the rope are laid in the same direction.

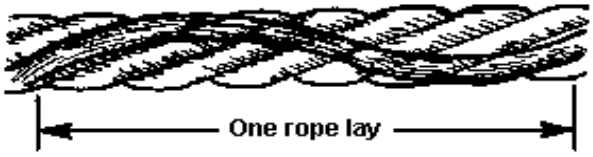

Figure 1-2. Rope lay.

LAY LENGTH: The lengthwise distance on a wire rope in which a strand makes one complete turn around the rope's axis (see Figure 1-2).

Left Lay:

- **Strand:** Strand in which the cover wires are laid in a helix having a left-hand pitch, similar to a left-hand screw.
- **Rope:** Rope in which the strands are laid in a helix having a left-hand pitch, similar to a left-hand screw.

Right Lay:

- **Strand:** Strand in which the cover wires are laid in a helix having a right-hand pitch, similar to a right-hand screw.
- **Rope:** Rope in which the strands are laid in a helix having a right-hand pitch, similar to a right-hand screw.

LIFT:

- Maximum safe vertical distance through which a hook can travel.
- The hoisting of a load.

LIFT, CRITICAL: Lifting of parts, components, assemblies, or other items

designated as critical because the effect of dropping, upset, or collision of them could:

- o Present a potentially unacceptable risk of personnel injury or property damage.
- o Result in significant release of radioactivity or other undesirable conditions
- o Cause undetectable damage resulting in future operational or safety problems
- o Cause significant work delay

LIFT, ORDINARY: Any lift not designated as a critical lift or a preengineered production lift.

LIFT, PREENGINEERED PRODUCTION: Repetitive, production-type lifting operation, independent of the nature of the load to be lifted, in which the probability of dropping, upset, or collision is reduced to a level acceptable to the responsible manager by preliminary engineering evaluation, specialized lifting fixtures, detailed procedures, operation-specific training, and independent review and approval of the entire process.

LINE: A rope used for supporting and controlling a suspended load.

LOAD: The total weight superimposed on the load block or hook.

LOAD BLOCK: The assembly of hook or shackle, swivel, bearing, sheaves, pins, and frame suspended by the hoisting ropes.

LOAD-BACKREST EXTENSION: A device extending vertically from the fork carriage frame.

LOAD-BEARING PARTS: Any part of a material-handling device in which the induced stress is influenced by the hook load. *A primary* load-bearing part is a part the failure of which could result in dropping, upset, or uncontrolled motion of the load. Load-bearing parts which, if failed, would result in no more than stoppage of the equipment without causing dropping, upset, or loss of control of the load are not considered to be primary load-bearing parts.

LOAD CENTER (FORKLIFTS): The horizontal longitudinal distance from the intersection of the horizontal load-carrying surfaces and vertical load-engaging faces of the forks (or equivalent load-positioning structure) to the center of gravity of the load.

LOW-LIFT TRUCK: A self-loading truck equipped with an elevating mechanism designed to raise the load only sufficiently to permit horizontal movement (see Figure 10-3).

MAGNET: An electromagnetic device carried on a crane hook and used to pick up loads.

MAIN HOIST: The hoist mechanism provided for lifting the maximum-rated load.

MAN TROLLEY: A trolley having an operator's cab attached to it.

MARLINE SPIKE: Tapered steel pin used in splicing wire rope.

MESSENGER STRAND: Galvanized strand or bronze strand used to support telephone and electrical cables.

MODULUS OF ELASTICITY: Mathematical quantity giving the ratio, within the elastic limit, between a definite range of unit stress on a wire rope and the corresponding elongation.

MOUSING: A method of bridging the throat opening of a hook to prevent the release of load lines and slings, under service or slack conditions, by wrapping with soft wire, rope, heavy tape, or similar materials.

NARROW-AISLE TRUCK: A self-loading truck intended primarily for right-angle stacking in aisles narrower than those normally required by counterbalanced trucks of the same capacity (see Figure 10-3).

NONDESTRUCTIVE EXAMINATION (NDE): The development and application of technical methods to examine materials or components, in ways that do not impair future usefulness and serviceability, in order to detect, locate, measure, and evaluate discontinuities, defects, and other imperfections; to assess integrity, properties, and composition; and to measure geometrical characteristics.

NONDESTRUCTIVE TESTING (NDT): See NONDESTRUCTIVE EXAMINATION.

NONROTATING WIRE ROPE: See Rotation-Resistant Wire Rope.

OPEN SOCKET: A wire-rope fitting consisting of a basket and two ears with a pin.

ORDER-PICKER TRUCK, HIGH-LIFT: A truck, controllable by an operator stationed on a platform, which is movable, has a load-engaging means, and is intended for (manual) stock selection. The truck may be capable of self-loading and/or tiering (see Figure 10-3).

OVERHEAD GUARD: A framework fitted to a truck over the head of a riding operator.

PALLET TRUCK: A self-loading, nonmotorized or motorized low-lift truck equipped with wheeled forks of dimensions sized to go between the top and bottom boards of a double-faced pallet, the wheels fitting into spaces between the bottom boards, so as to raise the pallet off the floor for transporting (see Figure 10-3).

PEENING: Permanent distortion of outside wire in a rope caused by pounding.

PERSON-IN-CHARGE: The manager or other responsible person (other than the equipment operator) known to be qualified and appointed to be responsible for the safe handling of critical loads and for the safe handling of noncritical items in, around, or above spaces in which critical items are located.

POWERED INDUSTRIAL TRUCK: A mobile, power-driven vehicle used to carry, push, pull, lift, stack, or tier material.

PRECISION LOAD POSITIONING DEVICES: A rigging accessory designed specifically to precisely raise and lower a load through a limited range of lifting/lowering motion (stroke). Standards units typically have 12 in. (30 cm) stroke and can position a load within 0.001 in. (0.025 mm). These devices commonly include a built-in load scale and in such cases may also serve as a load-indicating device.

PREFORMED WIRE ROPE: Wire rope in which the strands are permanently shaped, before being fabricated into the rope, to the helical form they assume in the wire rope.

PREFORMED STRAND: Strand in which the wires are permanently shaped, before being fabricated into the strands, to the helical form they assume in the strand.

PRESTRESSING: Stressing a wire rope or strand before use under such a tension and for such a time that stretch that would otherwise occur once the load is picked up is largely nonexistent.

PROOF TEST: A nondestructive tension test performed to verify construction and workmanship of slings or rigging accessories.

PUBLIC CARRIER: A for-hire company engaged in the public transportation of goods.

QUALIFIED: A person who, by possession of a recognized degree, certificate, or professional standing, or who, by extensive knowledge, training, and experience, has successfully demonstrated an ability and competence to solve or resolve problems relating to the subject matter and work.

QUALIFIED ENGINEER/QUALIFIED ENGINEERING ORGANIZATION: An engineer or engineering organization whose competence in evaluation of the type of equipment in question has been demonstrated to the satisfaction of the responsible manager.

QUALIFIED INSPECTOR: One whose competence is recognized by the responsible manager and whose qualification to perform specific inspection activities has been determined, verified, and attested to in writing.

QUALIFIED OPERATOR: One who has had appropriate and approved training, including satisfactory completion of both written and operational tests to demonstrate knowledge, competence, and skill, in the safe operation of the equipment to be used.

QUALIFIED RIGGER: One whose competence in this skill has been demonstrated by experience satisfactory to the appointed person.

NOTE: The term “rigger” or “qualified rigger” in this standard refers to the function performed, and in no way relates to the worker's classification in any union or bargaining unit.

RATED CAPACITY: The maximum hook load that a piece of hoisting equipment is designed to carry; also the maximum load that an industrial truck or a sling, hook, shackle, or other rigging tackle is designed to carry.

NOTE: At the option of the user, a rated capacity can be assigned that is less than the design-rated capacity.

REACH TRUCK: A self-loading truck, generally high-lift, having load-engaging means mounted so it can be extended forward under control to permit a load to be picked up and deposited in the extended position and transported in the retracted position (see Figure 10-3).

REEL: The flanged spool on which wire rope or strand is wound for storage or shipment.

REEVING: A system in which a rope travels around drums or sheaves.

REGULAR-LAY ROPE: Wire rope in which the wires in the strands and the strands in the rope are laid in opposite directions.

REVERSE BEND: Reeving of a wire rope over sheaves and drums so that it bends in opposite directions.

RIDER TRUCK: A truck that is designed to be controlled by a riding operator.

RIGGING: The hardware or equipment used to safely attach a load to a lifting device. The art or process of safely attaching a load to a hook by means of adequately rated and properly applied slings and related hardware.

ROLLERS: Relatively small-diameter cylinders or wide-faced sheaves used for supporting or guiding ropes.

ROTATION-RESISTANT WIRE ROPE: Wire rope consisting of a left-lay, lang-lay inner rope covered by right-lay, regular-lay outer strands.

RUNNING SHEAVE: A sheave that rotates as the load block is raised or lowered.

RUNWAY: Assembly of rails, girders, brackets, and framework on which a crane operates.

SAFE WORKING LOAD: Load that a rope may carry economically and safely.

SEALE: A strand construction having one size of cover wires with the same number of one size of wires in the inner layer and each layer having the same length and direction of lay. Most common construction is one center wire, nine inner wires, and nine cover wires.

SEIZE: To securely bind the end of a wire rope or strand with seizing wire or strand.

SEIZING STRAND: Small strand, usually of seven wires, made of soft-annealed-iron wire.

SEIZING WIRE: A soft-annealed-iron wire.

SELF-LOADER: A truck with tires that can fit between the top and bottom boards of a double-faced pallet.

SERVE: To cover the surface of a wire rope or strand with a wrapping of wire.

SHACKLE: A type of clevis normally used for lifting (see Figure 1-3).

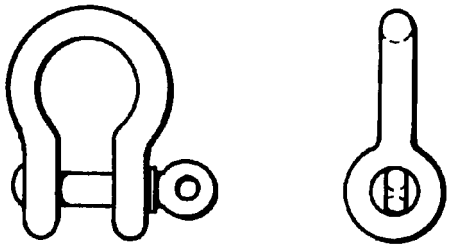

Figure 1-3. Shackle.

SHALL: A word indicating that an action is mandatory.

SHEAVE: A grooved wheel or pulley used with a rope to change direction and point of application of a pulling force.

SHEAVE, NONRUNNING (EQUALIZER): A sheave used to equalize tension in opposite parts of a rope, called nonrunning because of its slight movement.

SHEAVE, RUNNING: A sheave that rotates as the load block is lifted or lowered.

SHOULD: A word indicating a recommended action, the advisability of which depends on the facts in each situation.

SIDE LOADER: A self-loading truck, generally high-lift, having load-engaging means mounted in such a manner that it can be extended laterally under control to permit a load to be picked up and deposited in the extended position and transported in the retracted position (see Figure 10-3).

SIDE PULL: That portion of a hoist pull acting horizontally when the hoist lines are not operated vertically.

SLINGS: Wire ropes, chains, synthetic web, and metal mesh made into forms, with or without fittings, for handling loads.

SLINGS, BRAIDED: Very flexible slings composed of several individual wire ropes braided together.

SMOOTH-FACED DRUM: Drum with a plain, not grooved, face.

SPAN: The horizontal, center-to-center distance of runway rails.

SPIRAL GROOVE: Groove that follows the path of a helix around a drum, similar to the thread of a screw.

SPLICING: Interweaving of two ends of rope to make a continuous or endless length without appreciably increasing the diameter. Also refers to making a loop or eye in the end of a rope by tucking the ends of the strands.

Splice, Hand Tucked: A loop or eye formed in the end of a rope by tucking the end of the strands back into the main body of the rope in a prescribed manner.

Splice, Mechanical: A loop or eye formed in the end of a wire rope by pressing or swaging one or more metal sleeve over the wire rope junction.

STAINLESS-STEEL ROPE: Wire rope made of chrome-nickel steel wires having great resistance to corrosion.

STEEL-CLAD ROPE: Rope with individual strands spirally wrapped with flat steel wire.

STRAND: An arrangement of wires helically laid about an axis or another wire or fiber center to produce a symmetrical section.

SWAGED FITTINGS: Fittings in which wire rope is inserted and attached by a cold-forming method.

SWITCH, ELECTRIC: A device for making, breaking, or changing the connections in an electrical circuit.

SWITCH, EMERGENCY STOP: A manually or automatically operated electric switch to cut off electric power independently of the regular operating controls.

SWITCH, LIMIT: A switch that is operated by some part or motion of a power-driven machine or equipment to alter the electrical circuit associated with the machine or equipment.

SWITCH, MAIN: A switch controlling the entire power supply to a crane or other equipment, often called the disconnect switch.

TAG LINE: A rope used to prevent rotation of a load.

TAPERING AND WELDING: Reducing the diameter of the end of a wire rope and welding it to facilitate reeving.

THIMBLE: Grooved metal fitting to protect the eye of a wire rope (see Figure 1-4).

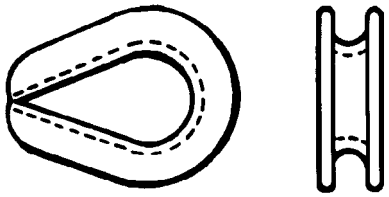

Figure 1-4. Thimble.

TIERING: The process of placing one load on or above another.

TINNED WIRE: Wire coated with tin.

TROLLEY: A unit consisting of frame, trucks, trolley drive, and hoisting mechanism moving on the bridge rails in a direction at right angles to the crane runway.

TROLLEY GIRTS: Structural members that are supported on the trolley trucks and that contain the upper sheave assemblies.

TROLLEY TRAVEL: Horizontal travel of a trolley at right angles to runway rails.

TROLLEY TRUCK: An assembly consisting of wheels, bearings, axles, and structural-supporting hoist mechanism and load girts.

TRUCK, POWERED INDUSTRIAL: A mobile, power-propelled truck used to carry, push, pull, lift, stack, or tier material (see Figure 10-3).

TURNBUCKLE: A device attached to wire rope for making limited adjustments in length. It consists of a barrel and right- and left-hand threaded bolts.

TWO-BLOCKING: The act of continued hoisting in which the load-block and head-block assemblies are brought into physical contact, thereby preventing further movement of the load block and creating shock loads to the rope and reeving system.

VERIFICATION: A procedure in which a design, calculation, drawing, procedure, instruction, report, or document is checked and signed by one or more parties. The one or morepersons designated to sign verify, based on personal observation, certified records, or direct reports, that a specific action has been performed in accordance with specified requirements.

WEDGE SOCKET: Wire-rope fitting in which the rope end is secured by a wedge.

WHEEL BASE: Distance between centers of outermost wheels for bridge and trolley trucks.

WHEEL LOAD: The load on any wheel with the trolley and lifted load (rated load) positioned on the bridge to give maximum-loading conditions.

WIRE ROPE: Wire strands laid helically around an axis or a core.

WIRE (ROUND): Single continuous length of metal, cold drawn from a rod.

WIRE (SHAPED): A single continuous length of metal either cold drawn or cold rolled from a rod.